



the Asbestos
FLEXBOARD
Handbook

DESCRIPTIVE INFORMATION

CONSTRUCTION DETAILS

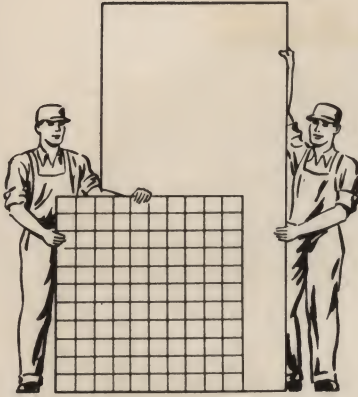
CUTTING METHODS



Published by Johns-Manville

FACTS ABOUT

WHAT IT IS





Flexboard is a building material made of asbestos and cement formed into large sheets under enormous hydraulic pressure. It is then re-pressed to produce unusual strength and unique flexibility.

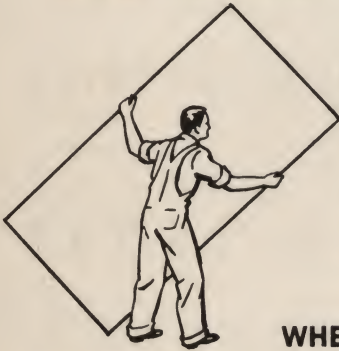
Size, Pattern and Color—Standard sheets are 4' wide by 8' long by either 1/8" or 3/16" thick. The finish is smooth and hard. The color is light grey. Scored sheets are 4' by 4' by 1/8" thick and are scored to form a pattern of 4" squares.

WHY IT IS SUPERIOR

Fireproof and Rotproof—Made of asbestos and cement, Flexboard can't burn. Underwriters' Laboratories, Inc. approve Flexboard as being an incombustible material. It's moisture proof, rodent proof, hard to scratch or mar, never needs preservatives and is easy to keep clean and sanitary.

Flexibility—This unique advantage makes Flexboard ideal for barrel roofs, arched ceilings, and circular alcoves. The plain sheets may be curved in either direction.

	
Minimum Longitudinal Radius	Minimum Transverse Radius
30" (1/8" thick)	36"
36" (3/16" thick)	54"



Easy to Handle—One person can lift and carry a full size sheet. The 1/8" thickness weighs 39 lbs., the 3/16" thickness 55 lbs. After unpacking it is best to stand the sheets separately allowing them to acclimate for 24 hours. The large sheets come two to the package, scored sheets six to the package.

WHERE TO USE FLEXBOARD

In either new construction or remodeling, Flexboard may be used on ceilings, outside or inside walls and for roofing range shelters and similar semi-weatherproof structures. It is also a good finishing material for outdoor dance floors or for miscellaneous purposes such as counter tops and chute or duct linings.

HOW TO APPLY IT

Plan all work in advance to avoid waste. Erect the Flexboard so the mottling on all sheets runs in the same direction. (On scored sheets the word TOP appears on the reverse side.)

ASBESTOS FLEXBOARD

Do not apply over damp surfaces. If unavoidable, back prime the sheets with shellac. Also prime with clear shellac the portions of sheets which will come in contact with putty (to retard absorption of oil).

For residing over existing walls, replace or repair all rotten or damaged members and nail down loose siding. Provide a reasonably smooth base for the Flexboard.

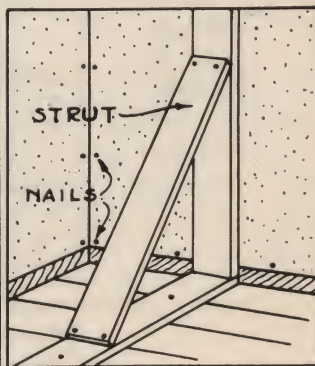
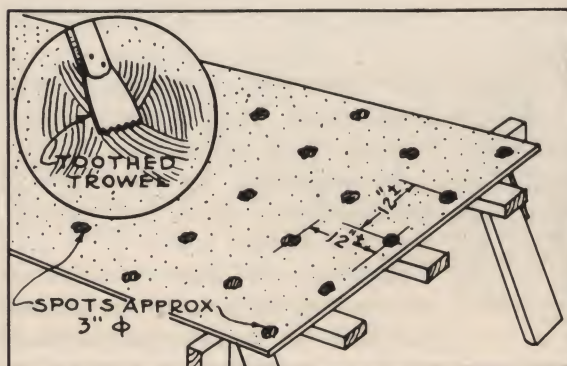
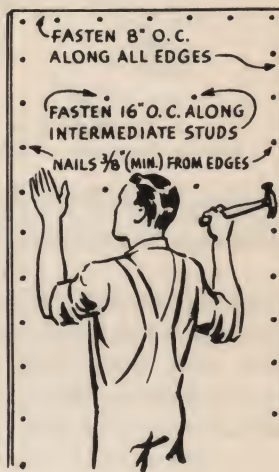
HOW TO FASTEN IT

Nailing—Nails should penetrate 1" into solid wood and may be driven close to the edge (3/8" minimum) without chipping. Drilling or punching is unnecessary.

Types of Nails—Use non-corrodible nails. Satisfactory drive screw nails may be obtained from the Hillwood Manufacturing Co., 21700 St. Clair Ave., Cleveland, Ohio, John Hassall, Inc., 402 Oakland St., Brooklyn, New York, or Independent Nail and Packing Co., Bridgewater, Mass., and lead head nails from American Casting and Manufacturing Co., 30 Main Street, Brooklyn, New York or Ray Proof Corporation, 330 East 26th St., New York, New York.

Location of Nails—From the starting edge work toward the opposite edge to "wipe" the sheet smooth. Sketch at right shows approved location and spacing for nails. If nails must be pulled use a wood block between the hammer and the Flexboard.

Adhesives—Johns-Manville makes a special Flexboard cement (1 gal. covers 225 sq. ft. approx.). Apply with toothed trowel in 3" spots, 1/8" thick, staggered on 12" centers approx., and kept 1" from sheet edge. See sketch below. Hold with temporary bracing for 24 hours or until set. Supplemental nailing or fastening should always be used.

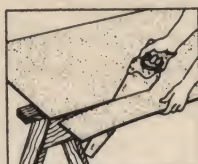


HOW TO WORK FLEXBOARD

Always cut Flexboard with the finished face up so any roughness from cutting will be largely on the underside of the sheet. For smoothing or shaping the cut edge, use a horseshoe or wood rasp or a block and #1 sandpaper.



Portable Power Saw



Hand Saw



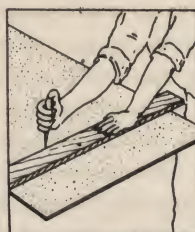
Stationary Power Saw

Sawing—For sawing by hand use a 10 point saw with little or no set. An expensive one is not necessary. Wet the saw with water for faster cutting.

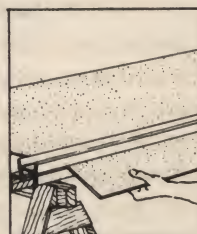
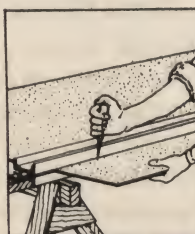
For mechanical saws, either portable or stationary, use Carborundum Blades #205-10-C3 or #205-6-4X made by the Carborundum Co., Niagara Falls, New York, or Dimet Rimlock Blade, Type "Standard Copper" made by the Felker Manufacturing Co., Torrence, California.

"Score and Snap"—Place a straight edge, such as a 2 x 4, along the cutting line. Score several times with a sharp, hard pointed ice pick or awl using the straight edge as a guide. Then, with the scored line along the edge of the bench, hold the straight edge firmly on the line and "snap" off the projecting strip intact.

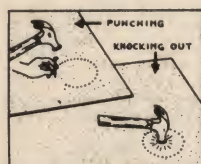
To save time when many similar pieces such as battens are to be cut, a "score cutting jig" is easy to build. This consists of two metal channels placed back to back to form a clamp. The upper channel acts as a cutting guide. For further details write to Johns-Manville.



"Score and Snap" by hand



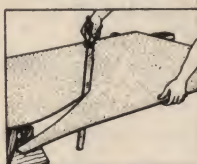
"Score Cutting Jig"



Small Holes



Large Holes

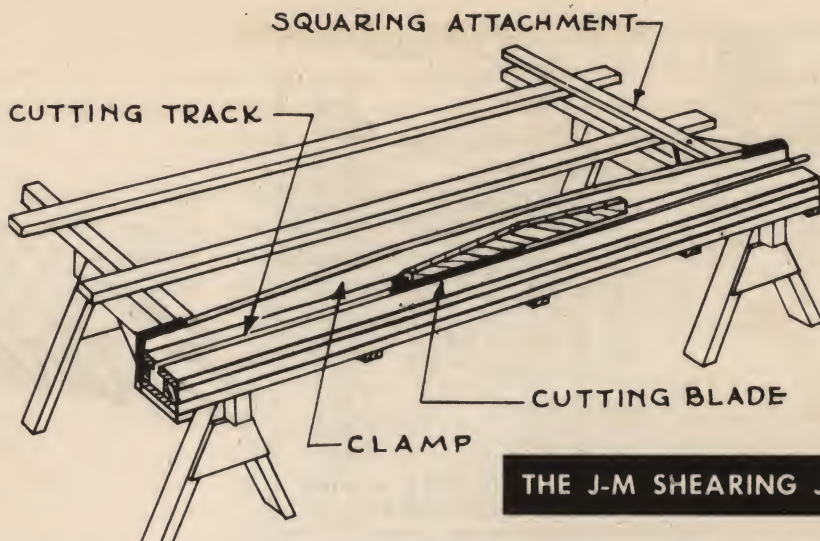


Circular Cuts

Circular Cuts—Lay out the circle to be cut. For small holes, punch a series of holes about 1/8" apart using a sharpened nail-set. Then, tap with a hammer to knock out the circular piece.

For large holes, first drill a hole on the circumference line as a starting point, then use a keyhole saw.

For curves, a 9" radius (minimum) can be cut using the point of an ordinary carpenter's saw, a 22" radius (minimum) using about half of the saw blade.



THE J-M SHEARING JIG*

Shown above is an ingenious tool recently developed by Johns-Manville engineers —The J-M Shearing Jig. It easily shears through the strong, tough Flexboard sheets six times faster than a hand saw. It's a big money saver.

The whole assembly is readily portable, requires no special skill to operate and may be used either right or left handed. The cutting knife leaves no burr, no need for sanding edges. It smoothly trims off strips a fraction of an inch wide, or cuts irregular shapes including circles. For details on how to obtain this unique, labor saving Shearing Jig, ask your dealer or write to Johns-Manville.

HOW TO USE THE JIG

To insert a sheet of Flexboard, remove the cutting blade from the track or balance it at one end. Set the clamping device so the sheet can be placed in approximate cutting position.

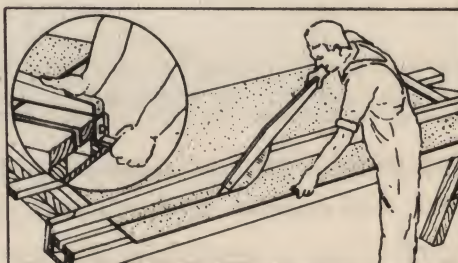
Measure off the desired width to be cut. Allow for the kerf when several pieces are to be cut from the same sheet. When using the squaring attachment, mark the sheet at one end only, otherwise mark at both ends.

Place marked width over the track, allowing for the kerf which is the same width as the blade. Then clamp the sheet in position.

To cut, make a full bite with the blade, then lift the blade, advance it along the track and cut again. The blade cuts about one foot per stroke.

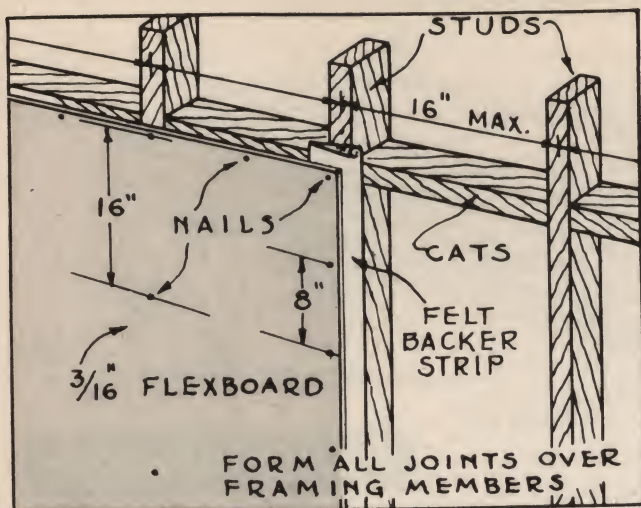


Inserting and Measuring Flexboard



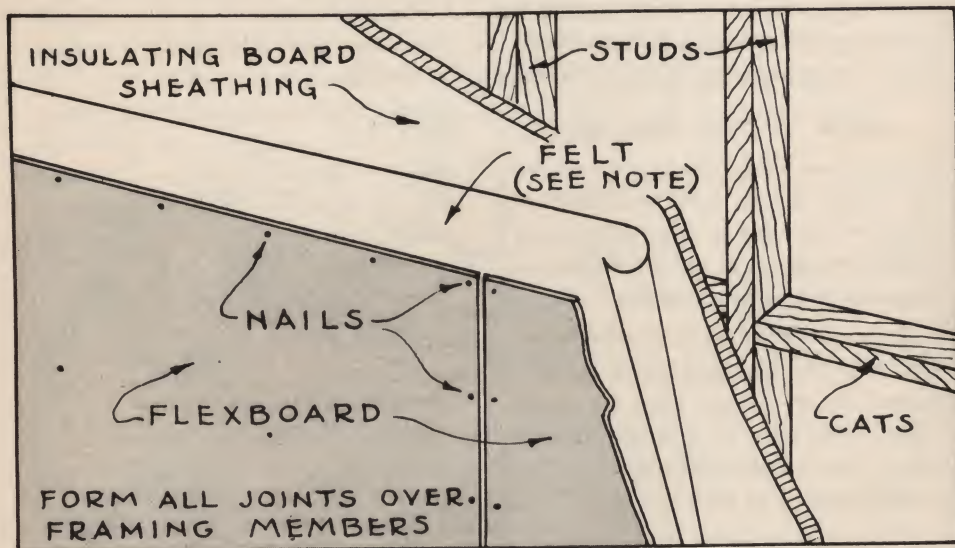
Clamping and Cutting Flexboard

*Patent Applied For.



Exterior

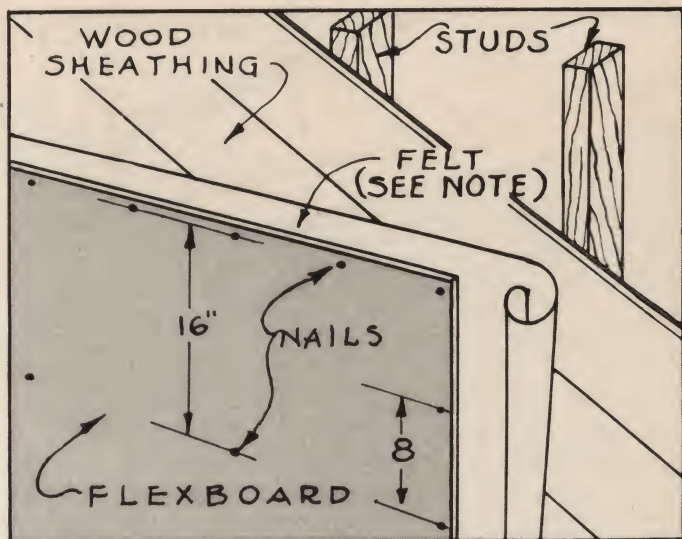
DIRECTLY TO STUDS — Use 3/16" Flexboard only. Maximum stud spacing for this method is 16" and cats must be installed so that all joints are formed over framing members.



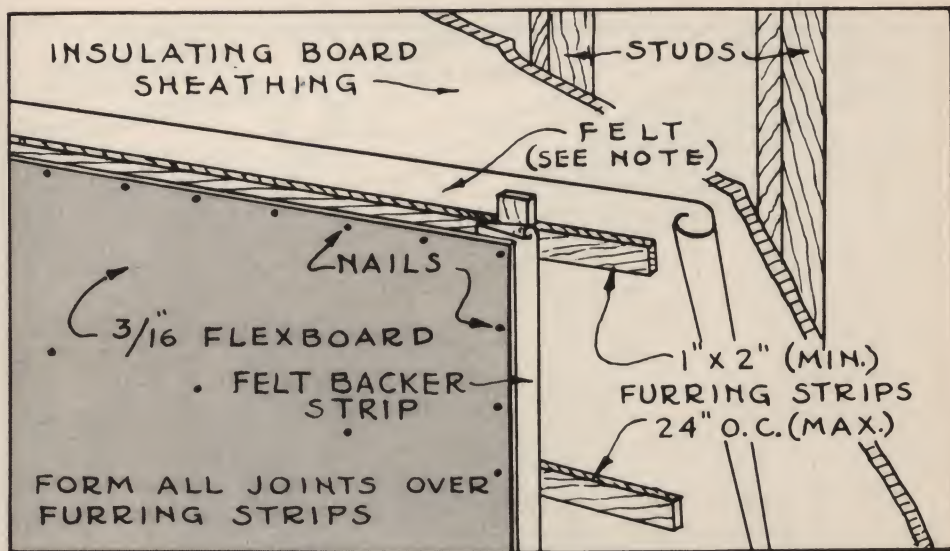
OVER INSULATING BOARD SHEATHING — Use 1/8" or 3/16" Flexboard. First apply a continuous felt* underlayment then erect Flexboard.

***NOTE** — Use a waterproof but not vapor proof membrane (having a permeability of not less than 11.25 grains), such as J-M Weathertite Building Paper and J-M Asphalt or Tarred Slaters Felt.

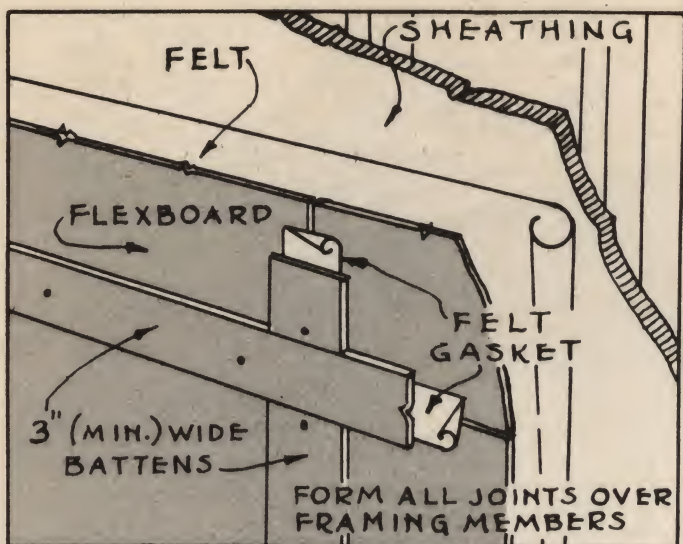
Walls



OVER SOLID WOOD BACKING — Use $1/8''$ or $3/16''$ Flexboard over closely boarded wood, $3/8''$ (minimum) plywood or old siding made reasonably smooth. First apply felt* underlayment then erect Flexboard.

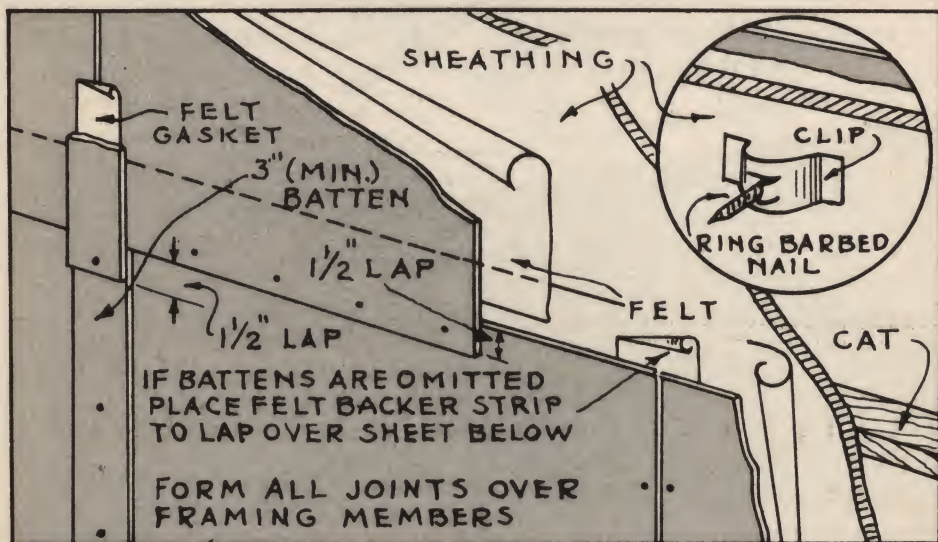


OVER INSULATING BOARD SHEATHING AND FURRING STRIPS — Use $3/16''$ Flexboard only. This method is used for irregular stud spacing. The $1'' \times 2''$ (minimum) furring strips are applied over a felt* underlayment. Strips may be $24''$ (maximum) on center although $16''$ on center is preferred. Strips must occur under all side and end joints.



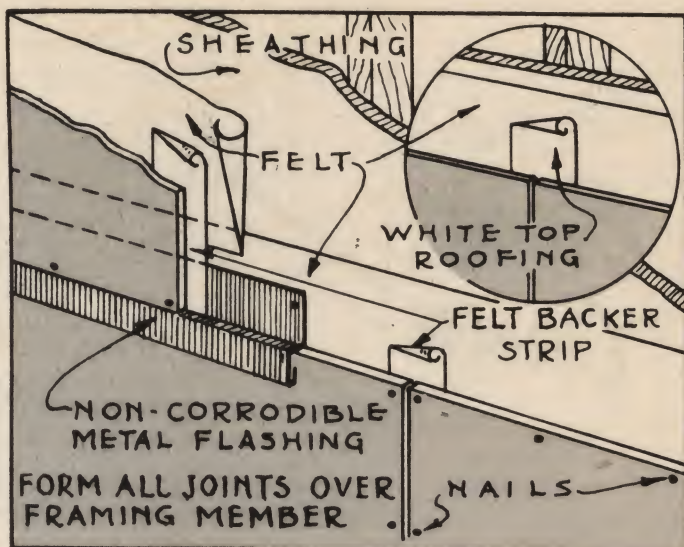
Exterior

BATTENED JOINTS — Over each joint between sheets use a felt gasket then nail on the Flexboard batten. At the end of battens two nails are used, throughout the length nails may be staggered.

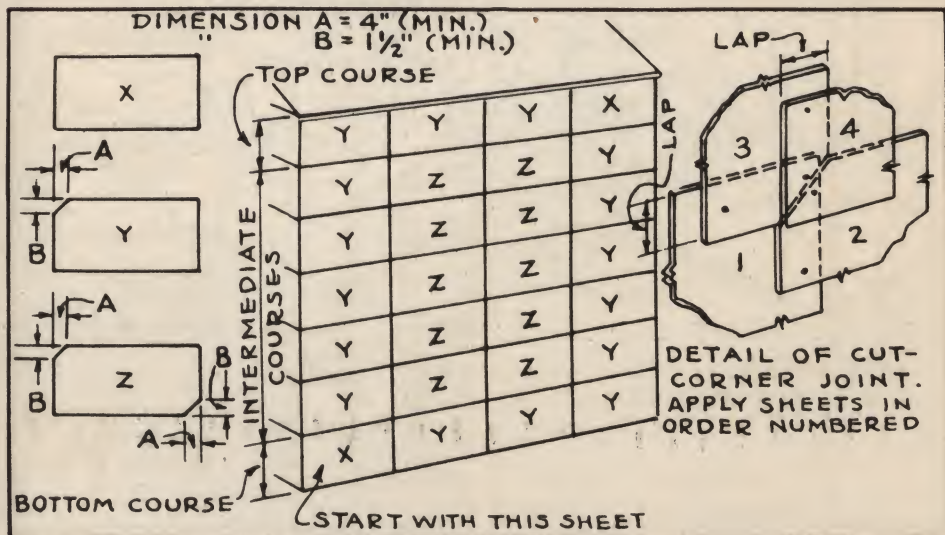


LAPPED JOINTS — Both the Flexboard and the felt underlayment are lapped. Laps should be over a framing member. However, over insulating board, cats may be omitted if a shingle clip is used between each pair of studs (inset drawing shows this method viewed from the back). Butted vertical joints may be left uncovered or battened.

Joints

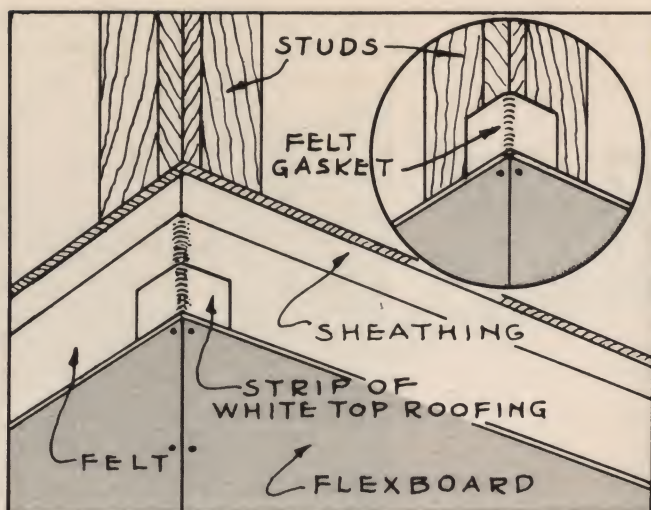


BUTT JOINTS — Non-corrodible flashing at horizontal joints is recommended. Flashing is turned up under both Flexboard and felt underlayment. White top roofing strips make vertical butt joints inconspicuous.

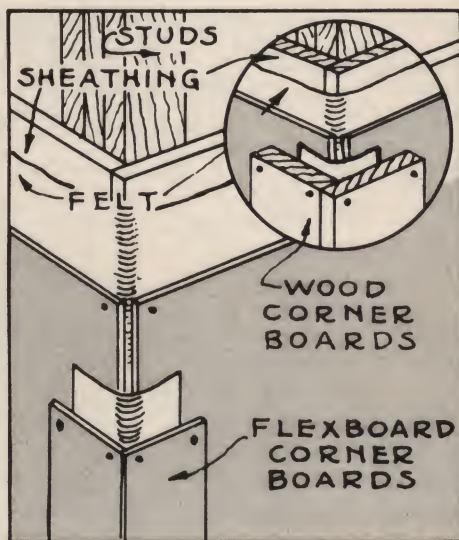
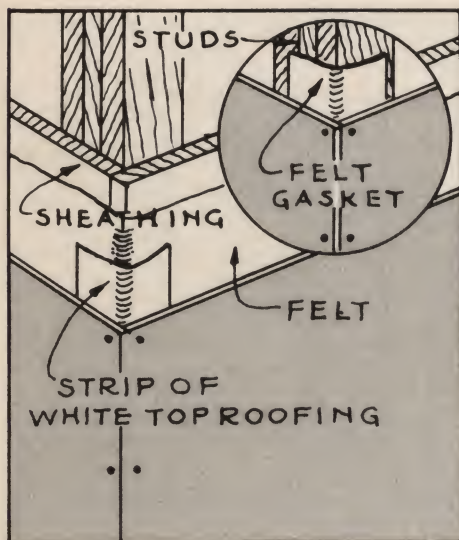


CUT CORNER CONSTRUCTION (all joints lapped) — Begin and end with "X" sheets. Cuts as shown are for application from left to right working from bottom to top. In this method all joints are lapped (without openings) yet all joints are aligned. Sheets may be placed with the long dimensions either all horizontal or all vertical.

Exterior Corners

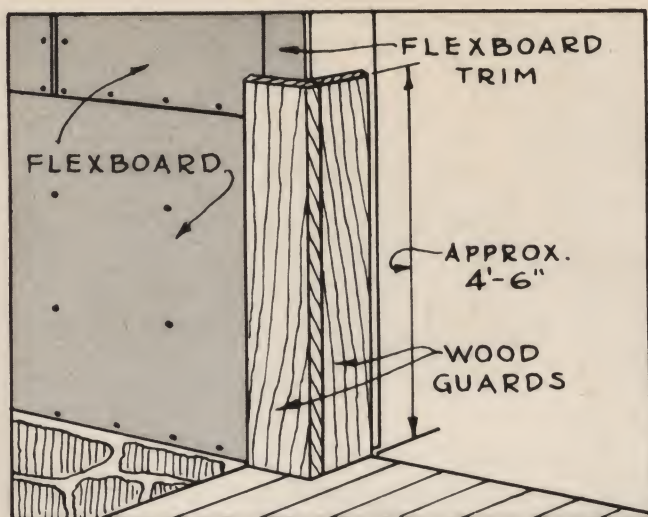


INSIDE CORNER (exterior of building) — Butt the Flexboard sheets. Under the joint White Top Roofing may be used over the felt. Inset sketch shows 3/16" Flexboard applied directly to the studs.



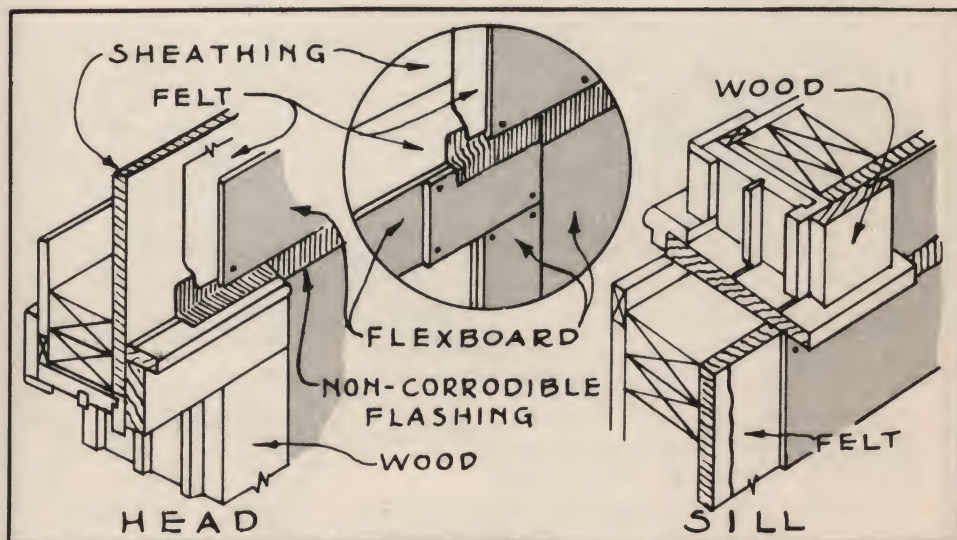
OUTSIDE CORNER — BUTTED (left above) — Butt the Flexboard sheets. Under the joint a strip of White Top Roofing may be used over the felt. Inset sketch shows 3/16" Flexboard applied directly to the studs.

OUTSIDE CORNER — BATTENED (right above) — Cover the joint between sheets with corner boards of Flexboard or with wood boards.

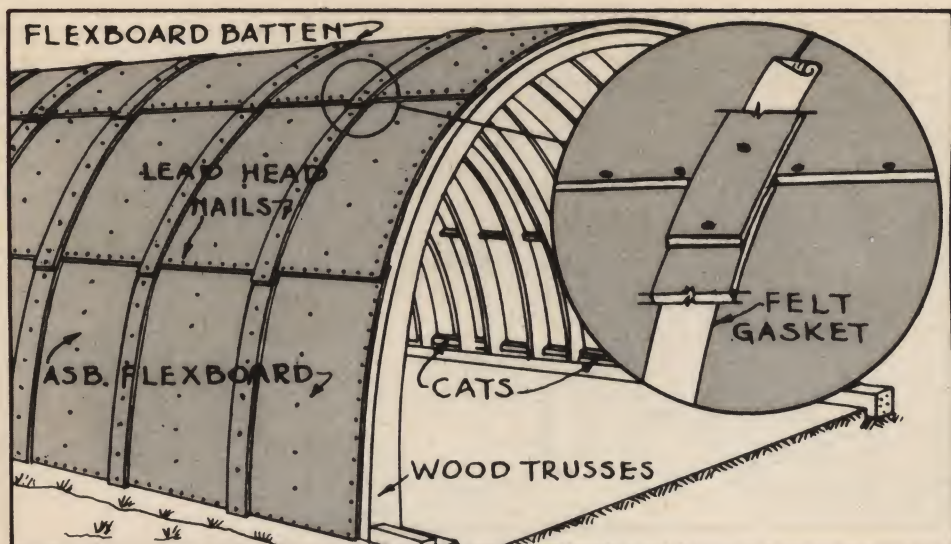


Door and Window Openings

GUARDS — When an opening is used for heavy traffic a substantial guard of wood should be provided. Carry it high enough to protect the Flexboard trim against passing trucks or machinery.

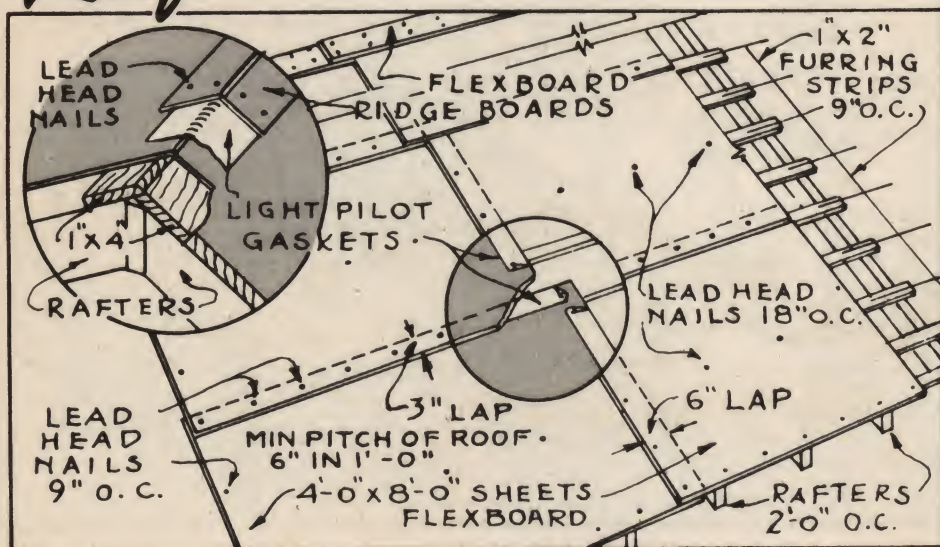


HEAD AND SILL DETAILS — A flashing of non-corrodible metal is recommended for the head. The sill treatment will be similar for either Flexboard or wood trim. In remodeling, the trim is removed before applying the Flexboard, then the old trim may be replaced or, for a more uniform appearance and elimination of upkeep, use Flexboard trim.



Curved Roofs

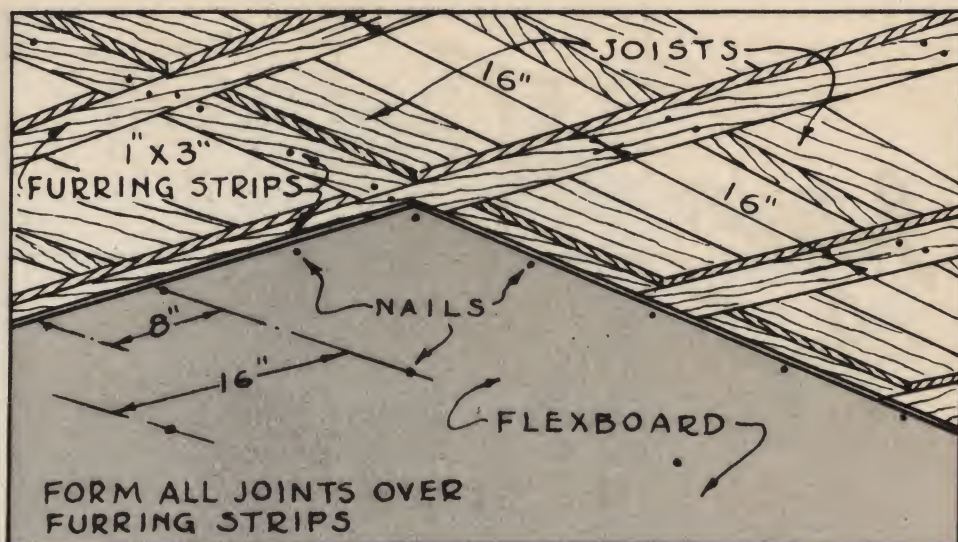
Nail sheets at bottom edge and work upwards. Horizontal joints are lapped 3" minimum. Vertical joints are butted and covered with battens. See inset.*



Straight Roofs

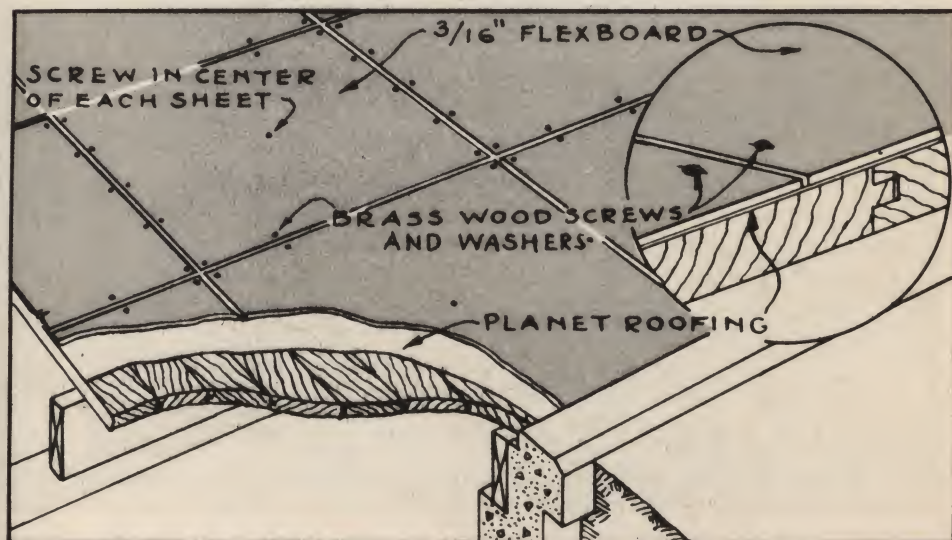
Apply 1" x 2" (minimum) strips at right angles to rafters. Lap all vertical and horizontal joints.*

*Details provide for economical shelter. See J-M representative for water-tight roof recommendations.



Ceilings

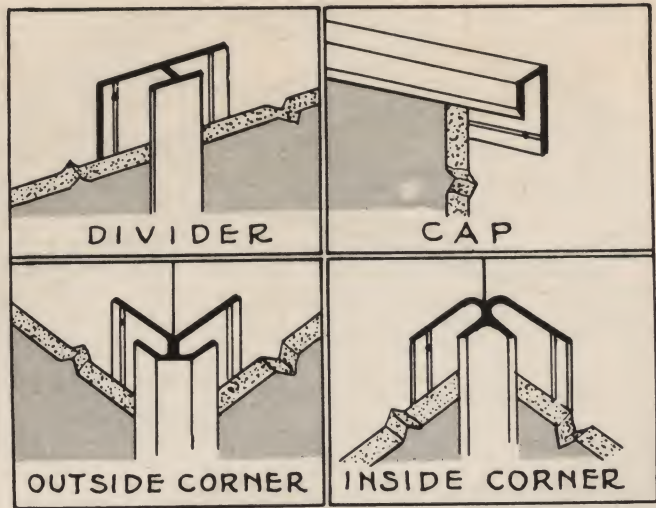
Use furring strips at right angles to joists. Over plaster, sound for joists before nailing the strips. Then apply 1/8" or 3/16" Flexboard.



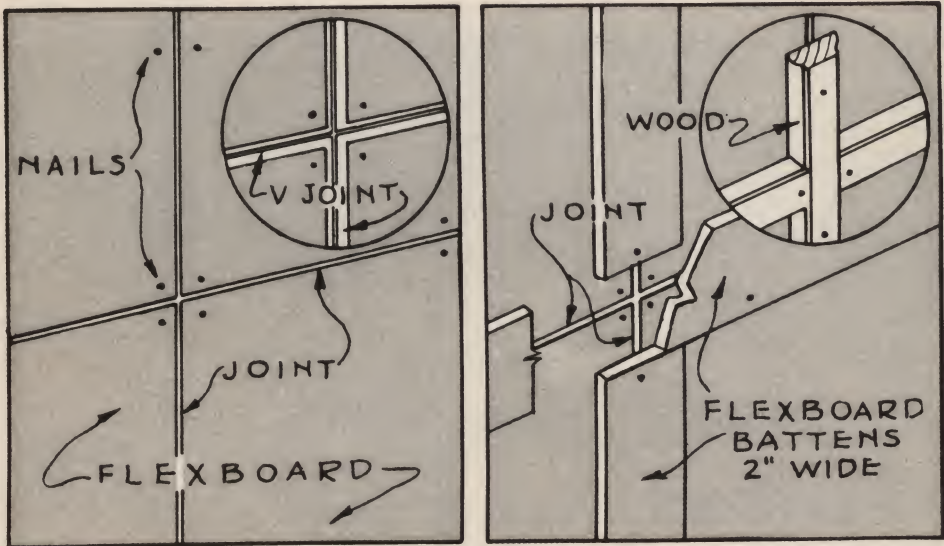
Outside Dance Floors

Use 3/16" Flexboard cut and squared to 4' x 4' secured with brass wood screws and washers. For detailed instructions on application and maintenance of Flexboard when used for this purpose, write to Johns-Manville.

Interior Joints

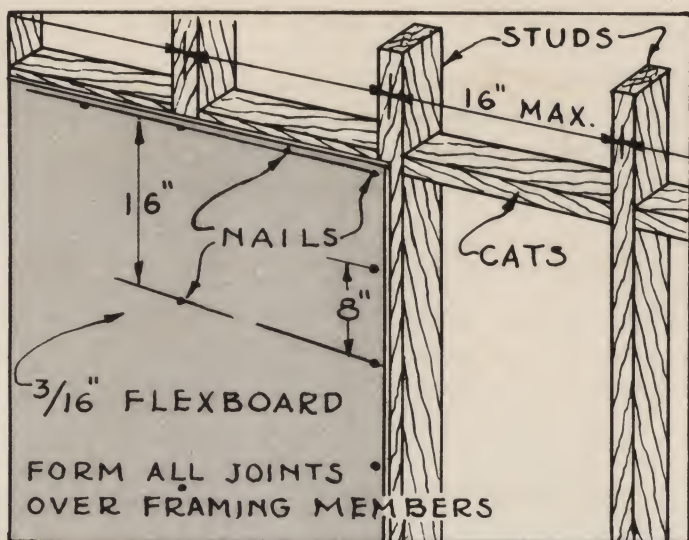


MOULDINGS — Metal or plastic mouldings, applied according to the manufacturer's directions, may be used. With this form of attachment, either face nailing or adhesives should be added to prevent "drumming".



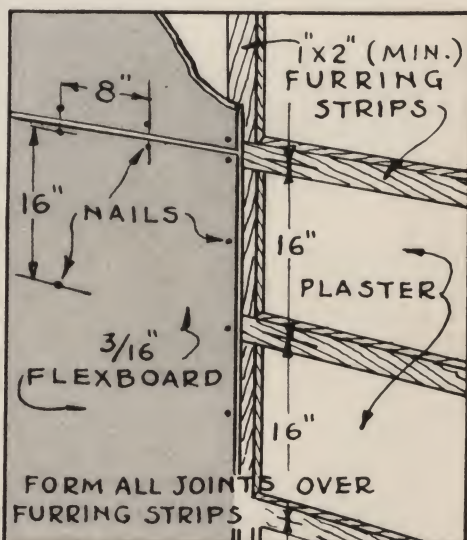
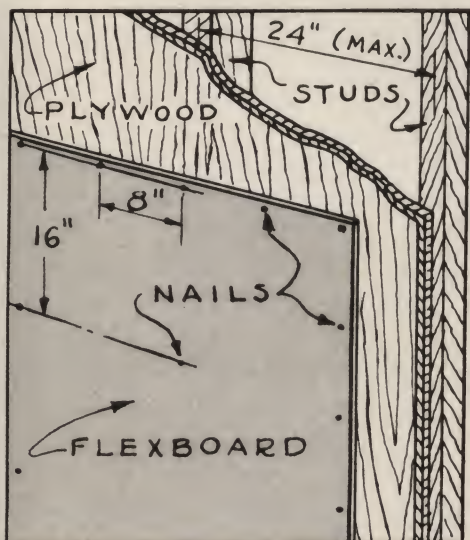
BUTT JOINTS (left) — When joints are to be uncovered the edges of the Flexboard sheets should be fitted neatly. Inset sketch shows a V-joint (preferred) made by beveling the edges of the sheets with a rasp.

BATTENED JOINTS (right) — Use Flexboard (2" minimum) or wood battens.



Interior Walls

DIRECTLY TO STUDS — Use 3/16" Flexboard only. Maximum stud spacing for this method is 16" and cats must be installed so that all joints are formed over framing members.



OVER BACKING — If the backing is plywood (minimum thickness 3/8"), either 1/8" or 3/16" Flexboard may be used as shown in the left hand drawing. When the application is over plaster, furring strips must be installed and only 3/16" Flexboard is recommended. As shown in the right hand sketch, the furring 1" x 2" (minimum) must come under all joints.

P A I N T I N G A N D C L E A N I N G

YOU CAN DECORATE FLEXBOARD — Flexboard requires no preservative treatment. However, for decorative purposes, it may be painted. The surface should be clean and dry. A good paint should always be used and the paint manufacturer's application directions should be carefully followed.

FLEXBOARD IS EASY TO KEEP CLEAN AND SANITARY — Ordinary dirt may be removed with a fiber brush, soap and water. Cleansers such as Old Dutch, Oakite, Bab-O or Babbitt's may also be used. Dirt stains can usually be removed by using a strong solution of Sodium Hypochlorite or a 2% solution of Oxalic Acid if the dirt stains are severe. To remove oil, grease and similar stains use carbon tetrachloride (Carbona) then rinse off all cleansers and acids thoroughly with clear water.



SPECIAL INFORMATION

The Engineering Department of the Building Products Division of Johns-Manville is always ready to help with special building or fabrication problems. Write to Johns-Manville, 22 E. 40th Street, New York 16, N. Y.



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